

इंटरनेट

मानक

Disclosure to Promote the Right To Information

Whereas the Parliament of India has set out to provide a practical regime of right to information for citizens to secure access to information under the control of public authorities, in order to promote transparency and accountability in the working of every public authority, and whereas the attached publication of the Bureau of Indian Standards is of particular interest to the public, particularly disadvantaged communities and those engaged in the pursuit of education and knowledge, the attached public safety standard is made available to promote the timely dissemination of this information in an accurate manner to the public.

“जानने का अधिकार, जीने का अधिकार”

Mazdoor Kisan Shakti Sangathan

“The Right to Information, The Right to Live”

“पुराने को छोड़ नये के तरफ”

Jawaharlal Nehru

“Step Out From the Old to the New”

IS 10176 (1982): Fibreboard boxes for packing soaps [CHD
15: Paper and its products]



“ज्ञान से एक नये भारत का निर्माण”

Satyanarayan Gangaram Pitroda

“Invent a New India Using Knowledge”



“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”

Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”

BLANK PAGE



IS: 10176 - 1982

Indian Standard

SPECIFICATION FOR
FIBREBOARD BOXES FOR PACKING OF SOAPS

UDC 621.798.143 : 676.273.2 : 661.187



© Copyright 1982

INDIAN STANDARDS INSTITUTION
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

Indian Standard

SPECIFICATION FOR FIBREBOARD BOXES FOR PACKING OF SOAPS

Paper and Flexible Packaging Sectional Committee, MCPD 14

Chairman

SHRI K. VISWANATHAN

Members

SHRI K. R. NARASIMEAN (*Alternate to*
Shri K. Viswanathan)

DR S. R. AGARWAL

SHRI S. M. KHAN (*Alternate*)

SHRI A. B. AJMERA

SHRI C. B. AJMERA (*Alternate*)

DR R. P. ANEJA

SHRI G. K. BHAI

SHRI VIDYA CHARAN BHARGAVA

SHRI S. K. GHOSH (*Alternate*)

SHRI L. N. BURMAN

SHRI P. L. BURMAN

SHRI D. S. CHADHA

SMT DEBI MUKHERJEE (*Alternate*)

SHRI S. CHAKRABARTI

SHRI V. DHAWAN (*Alternate*)

SHRI B. D. CHATTERJEE

SHRI P. R. SESHAN (*Alternate*)

SHRI T. GANGADHARAN

SHRI R. KRISHNAN (*Alternate*)

SHRI P. S. HARIHARAKRISHNAN

SHRI BHAGVAN BALAJI SINGH (*Alternate*)

DR R. JAYARAM

JOINT DIRECTOR (T R A F F I C
COMMERCIAL RATES)

SHRI S. K. KESHAVA

SHRI Y. C. DEVESHWAR (*Alternate*)

SHRI A. J. KOTHARI

SHRI R. P. SOOCHAK (*Alternate*)

Representing

Metal Box India Ltd, Calcutta

Glaxo Laboratories (India) Ltd, Bombay

Card Board Box Manufacturing Co, Calcutta

National Dairy Development Board, Anand

Indian Plastics Federation, Calcutta

Ministry of Agriculture, Directorate of Plant
Protection, Quarantine & Storage, Faridabad

Indian Paper Makers Association, Calcutta

Indian Paper Mills Association, Calcutta

Directorate General of Health Services (Central
Committee for Food Standards), New Delhi

Hindustan Lever Ltd, Bombay

Indian Petrochemicals Corporation Ltd, Vadodara

Indian Explosives Ltd, Calcutta

The Travancore Rayons Ltd, Rayonpuram

Federation of Biscuit Manufacturers of India,
Delhi

Railway Board, Ministry of Railways

I. T. C. Ltd, Calcutta

Larsen & Toubro Ltd, Bombay

(Continued on page 2)

© Copyright 1982

INDIAN STANDARDS INSTITUTION

This publication is protected under the *Indian Copyright Act* (XIV of 1957) and reproduction in whole or in part by any means except with written permission of the publisher shall be deemed to be an infringement of copyright under the said Act.

(Continued from page 1)

<i>Members</i>	<i>Representing</i>
SHRI J. S. MATHARU	Directorate General of Technical Development, New Delhi
SHRI V. B. SAXENA (<i>Alternate</i>)	
SHRI A. L. MUTHIAH	India Packaging Products Pvt Ltd, Bangalore
SHRI A. L. ANNAMALAI (<i>Alternate</i>)	
SHRI M. S. NAIK	Pesticides Association of India, New Delhi
SHRI P. V. NARAYANAN	Indian Institute of Packaging, Bombay
SHRI A. K. SENGUPTA (<i>Alternate</i>)	
DR A. N. NAYER	Packaging and Wood Products Consultancy Service, New Delhi
SHRI SANJAY K. NAYER (<i>Alternate</i>)	
DR S. Y. PANDIT	Bayer (India) Ltd, Bombay
DR P. V. RAIKAR (<i>Alternate</i>)	
SHRI M. K. RAMASAMI	Jayant Packaging Pvt Ltd, Madras
SHRI R. MUTHIAH (<i>Alternate</i>)	
SHRI M. K. RAMASAMI	Federation of Corrugated Box Manufacturers of India, Bombay
SHRI S. S. KEJRIWAL (<i>Alternate</i>)	
SHRI C. V. N. RAO	Office of the Development Commissioner, New Delhi
SHRI G. V. RAO	Directorate of Standardization, Ministry of Defence (R & D)
SHRI O. P. SRIVASTAVA (<i>Alternate</i>)	
SHRI J. C. SHAH	Federation of Associations of Small Industries of India, New Delhi
SHRI D. CHADHA (<i>Alternate</i>)	
SHRI PRAFULL J. SHETH	Solid Containers Ltd, Bombay
SHRI V. S. JOSHI (<i>Alternate</i>)	
SHRI M. K. LAHERI (<i>Alternate</i>)	
SHRI S. SUNDER	India Foils Ltd, Calcutta
SHRI S. P. CHATTERJEE (<i>Alternate</i>)	
SHRI R. C. TANDON	Forest Research Institute & Colleges, Dehra Dun
SHRI D. V. VARMA	Ministry of Defence (DGI)
SHRI NIRMAL SINGH (<i>Alternate</i>)	
SHRI P. S. DAS, Director (MCPD)	Director General, ISI (<i>Ex-officio Member</i>)

Secretary

SHRI A. R. GULATI
Deputy Director (MCPD), ISI

Boxes, Drums and Containers Subcommittee, MCPD 14 : 2

Convener

SHRI A. B. AJMERA Card Board Box Manufacturing Co, Calcutta

Members

SHRI C. B. AJMERA (*Alternate to*
Shri A. B. AjmERA)
SHRI J. BANERJEE Directorate of Standardization (Ministry of
Defence)
SHRI U. B. KANCHAN (*Alternate*)

(Continued on page 9)

Indian Standard

SPECIFICATION FOR FIBREBOARD BOXES FOR PACKING OF SOAPS

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 30 April 1982, after the draft finalized by the Paper and Flexible Packaging Sectional Committee had been approved by the Marine, Cargo Movement and Packaging Division Council.

0.2 Fibreboard boxes are largely used for the packaging of soaps. Solid fibreboard boxes are usually used for laundry soaps with low TFM, whereas corrugated fibreboard boxes are recommended for toilet soaps with high TFM. General requirements for corrugated fibreboard and solid fibreboard boxes have been covered in IS : 2771 (Part I)-1977* and IS : 2771 (Part II)-1975† respectively. Keeping in view the nature of the product being packed, requirements like puncture resistance, water absorption (Cobb test) and the compression strength of the boxes have been covered specifically in this standard.

0.3 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960‡. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard covers the requirements of corrugated fibreboard and solid fibreboard boxes for packaging of soaps.

2. TERMINOLOGY

2.1 For the purpose of this standard the definitions given in IS : 4261-1967§, IS : 7186-1973|| and IS : 2771 (Part I)-1977* shall apply.

*Specification for fibreboard boxes: Part I Corrugated fibreboard boxes (*first revision*).

†Specification for fibreboard boxes: Part II Solid fibreboard boxes (*first revision*).

‡Rules for rounding off numerical values (*revised*).

§Glossary of terms relating to paper and pulp based packaging materials.

||Glossary of terms relating to paper and flexible packaging.

3. IDENTIFICATION OF BOX FACES

3.1 Container Having a Preferred Position for Transport — The container shall be placed in the preferred position for transport so that the manufacturer's joint forms the vertical edge of the face towards the observer. The faces shall then be numbered as in Fig. 1.

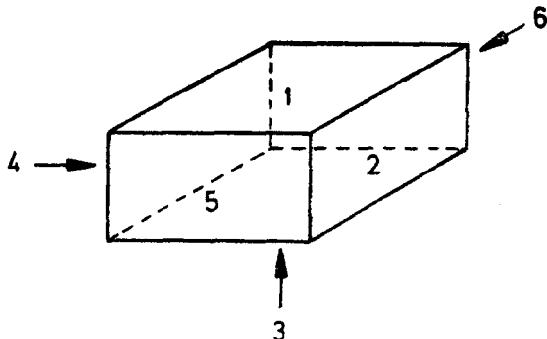


FIG. 1 IDENTIFICATION OF CONTAINER FACES

3.1.1 Edges shall be identified by numbers on the two faces adjacent to the edges, for example, 2-5 means the vertical edge formed by faces 2 and 5.

3.1.2 Corners shall be identified by numbers on the three faces adjacent to the corners for example, 1-2-5 means the right hand top corner formed by the faces 1, 2 and 5.

4. MATERIAL

4.1 The following material shall be used for the manufacture of boxes.

4.1.1 Corrugated Fibreboard — The corrugated fibreboard for the container shall be single face or 3-ply board using the liners and fluting medium made from kraft. The fluting shall be of Type B (narrow fluting).

4.1.2 Adhesive — Any suitable adhesive capable of firmly holding the various plies together shall be used. Sodium silicate or any other highly alkaline adhesive shall not be used. The adhesive shall contain a mould inhibitor in sufficient quantity to provide protection from mould growth. Following mould inhibitors and their percentage by weight of the fibreboard are recommended for the purpose:

- i) Sodium salicyl anilide (SSA) — 0.1 percent
- ii) Sodium pentachlorophenate (Santobrite) — 0.5 percent
- iii) TBZ (Metosol TK — 100) — 0.1 percent
- iv) Copper oxyne — 0.5 percent.

4.1.3 Solid Fibreboard — It shall be a laminated millboard with the outermost layer of kraft paper. The kraft paper shall be laminated to the millboard using dextrine base adhesive. The millboard layer may be laminated with silicate adhesive. The total grammage shall be 950 ± 50 g. The kraft paper layer is specified to obtain a printable surface on the box. The grammage of the kraft paper may be as agreed to between the purchaser and the supplier. Sufficient quantity of a mould inhibitor shall be incorporated in the dextrine adhesive to provide protection from mould growth (see 4.1.2).

4.1.4 Staples — Mild steel, galvanised 0.625 mm thick \times 13 mm crown \times 3 mm wide staples shall be used for stapling the manufacturer's joint.

5. MANUFACTURE, WORKMANSHIP AND FINISH

5.1 The boxes shall be manufactured from one piece of fibreboard, scored and slotted to form a body piece having four flaps for closing each of the opposite ends. The flaps along the longer edge shall be the outer flaps and those along the shorter edge shall be the inner flaps. All flaps shall be of equal length and the outer flaps shall meet when closed (see Style 201 and 202 of IS : 6481-1971*).

5.2 The blank shall be properly creased and slotted so that when the box is assembled, there shall be no holes at the corners. The flaps of the box shall be capable of being folded through 180° along the line of creasing without showing any sign of fracture of the board on facings.

5.3 The body joint shall be lapped and the lapping shall not be less than 30 mm. The lapped joint shall be secured using rust-free, non-protruding but angled staples.

5.3.1 The spacing between the stitches shall not be more than 60 mm. The distance between the outer staples and the end joints shall not exceed 25 mm.

6. DIMENSIONS AND TOLERANCES

6.1 The internal dimensions of the assembled box shall be as agreed to between the purchaser and the supplier.

6.2 A tolerance of ± 3 mm shall be permissible on the ordered dimensions.

7. SAMPLING, CONDITIONING AND TESTING

7.1 Sampling — A consignment shall be sampled within seven days of the receipt by the purchaser. The sampling and test schedule shall be as given in Appendix A.

*Guide for principal uses and styles of fibreboard containers.

7.2 Conditioning — The sample of boxes so selected shall be deemed to represent the whole consignment of boxes and shall be conditioned for testing by the method prescribed in 5 of IS : 1060(Part I)-1966*.

8. FIBREBOARD REQUIREMENTS

8.1 The requirements for the material of construction of the box as well as the methods of tests for evaluating these requirements shall be as given in Table 1.

TABLE 1 REQUIREMENTS OF FIBREBOARD

SL No.	TEST	REQUIREMENT		METHOD OF TEST, REF TO CLAUSE No.
		Corrugated Board	Solid Board	
1.	Bursting strength kg/cm ² (Min)	6.5	9.0	12.5 of IS : 1060 (Part II)-1960*
2.	Puncture resistance, beach units (Min)	120	150	9 of IS : 4006 (Part II)-1972†
3.	Water absorption, g/m ² (Cobb/30 minutes)	120	120	6 of IS : 4006‡ (Part I)-1966

*Methods of sampling and test for paper and allied products, Part II.

†Methods of test for paper and pulp based packaging materials, Part II.

‡Methods of test for paper and pulp based packaging materials, Part I.

8.2 Compression Strength — When tested as per the method given in IS : 7028 (Part VI)-1973† conditioned at a temperature of $27 \pm 2^{\circ}\text{C}$ and 65 ± 2 percent RH, the compression strength of the empty box at the maximum deflection of 20 mm shall be not less than 1.1 kg/cm of the perimeter of the box.

8.3 Printability — The nature of the outer surface of the box shall permit marking by stamping stencilling or printing.

8.4 Resistance to Mould Growth — The fibreboard when tested by the method given in Appendix B shall not show any fungus or mould growth.

9. PACKING AND MARKING

9.1 The boxes shall be marked, printed, packed and supplied as agreed to between the purchaser and the supplier.

9.1.1 The fibreboard boxes conforming to this standard may also be marked with the ISI Certification mark.

*Methods of sampling and test for paper and allied products, Part I (revised).

†Performance tests for complete, filled transport packages: Part VI Compression test.

NOTE 1 — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act and the Rules and Regulations made thereunder. The ISI Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

NOTE 2 — The boxes if covered under the ISI Mark scheme shall be marked in such a way that the marking for the boxes is not in any way construed for the marking on the contents packed into them.

APPENDIX A

(Clause 7.1)

SAMPLING AND TEST SCHEDULE

A-1. SAMPLING

A-1.1 From each consignment of 10 000 containers or part thereof a sample consisting of 20 complete containers shall be chosen as follows:

- a) *Bundles* — 20 bundles shall be chosen from the consignment at random and from each of these bundles one complete container shall be chosen at random.
- b) *Loose deliveries* — 20 complete containers shall be chosen at random.

From the sample so chosen, the number of containers to be selected for testing, and the number of tests to be carried out on each selected container shall be in accordance with the requirements of Table 2.

TABLE 2 SCHEDULE OF TESTS

TEST	CL REF	NO. OF CONTAINERS TO BE TESTED	NO. OF TESTS TO BE CARRIED OUT ON EACH CONTAINER
Grammage	4.1.3	3	1
Bursting strength	8.1	3	10
Puncture resistance	8.1	3	1
Water absorption (Cobb test)	8.1	3	(1 on outer surface only)
Flap bend	5.2	3	2
Compression strength	8.2	3 (container including stacking collar)	1

NOTE — A container selected to provide test pieces for one test (for example the flap bend test) may be used if necessary to provide test pieces for other tests.

A-2. ACCEPTANCE

A-2.1 A consignment of containers shall be deemed to comply with this standard if all of the containers tested give test results which are within specified limits.

If only one of the test containers fails to satisfy one or more of the test requirements, the provisions of **A-3** shall apply.

A-3. RETESTING

A-3.1 For retesting purposes, twice the number of complete containers originally tested shall be chosen at random from the same consignment all of which shall satisfy the requirements of the standard for the test requirements.

APPENDIX B

(*Clause 8.4*)

MOULD GROWTH TEST

B-1. TEST SAMPLES

B-1.1 Six samples (50 × 50 mm) shall be cut at random from the material under test. Six similar samples shall also be taken from the basic untreated material to serve as control. All the samples shall be suitably marked.

B-2. INCUBATION

B-2.1 The samples prepared at **B-1** shall then be suspended/exposed in a suitable chamber having a humidity of 90 to 95 percent RH and temperature of $30 \pm 1^{\circ}\text{C}$ for a period of seven days.

B-3. OBSERVATIONS

B-3.1 After the incubation period all the 12 test pieces shall be examined under a magnifying lens. The control samples shall show moderate to heavy fungus growth, but the test samples shall not show any fungus growth.

(Continued from page 2)

Members

SHRI M. P. BAYA
SHRI B. BHATTACHERJEE

SHRI S. MITRA (*Alternate*)
SHRI L. N. BURMAN
SHRI S. CHAKRABARTI
SHRI V. DHAWAN (*Alternate*)
DEPUTY DIRECTOR
SHRI B. K. DOSHI
SHRI S. B. DOSHI (*Alternate*)
SHRI T. GANGADHARAN
SHRI R. KRISHNAN (*Alternate*)
SHRI S. N. HARIATKA

SHRI M. K. MEHTA (*Alternate*)
SHRI G. C. JAIN
SHRI S. K. KESHAVA
SHRI K. S. KRISHNAMACHARI
SHRI V. R. KRISHNAMOORTHY
SHRI KAMAL MEATTLE
SHRI M. M. MENON
SHRI A. L. MUTHIAH
SHRI A. L. ANNAMALAI (*Alternate*)
SHRI NITIN J. NANAVATY
SHRI V. B. SHAH (*Alternate*)
SHRI P. V. NARAYANAN
DR A. N. NAYER

SHRI M. K. RAMASAMI
SHRI B. A. SHAH
SHRI M. K. MEHTA (*Alternate*)
SHRI N. V. SHETH
SHRI L. N. SHETTY (*Alternate*)
SHRI H. D. SREENATH
DR RAVI TALWAR
SHRI R. C. TANDON
SHRI P. VEERRAJU
SHRI E. R. VICCAJEE

Representing

Punalur Paper Mills Ltd, Punalur
Corrugating & Paper Processing Co Pvt Ltd,
Calcutta

Indian Paper Makers Association, Calcutta
Hindustan Lever Ltd, Bombay

Ministry of Railways (Railway Board)
Swastic Paper Industries, Bombay

Indian Explosives Ltd, Calcutta

Federation of Corrugated Box Manufacturers of
India, Bombay

Ashok Paper Mills Ltd, Calcutta
I. T. C. Ltd, Calcutta
Seshasayee Paper and Boards Ltd, Erode
Glaxo Laboratories (India) Ltd, Bombay
Unisystem Pvt Ltd, Faridabad
The Andhra Pradesh Paper Mills Ltd,
Rajahmundry
India Packaging Products Pvt Ltd, Bangalore

Apurva Containers Pvt Ltd, Ahmadabad

Indian Institute of Packaging, Bombay
Packaging & Wood Products Consultancy
Service, New Delhi

Jayant Packaging Pvt Ltd, Madras
Saurashtra Packaging Pvt Ltd, Bombay

Solid Containers Ltd, Bombay

Laxmi Board and Paper Mills Pvt Ltd, Kalyan
The Paper Product Ltd, Bombay
Forest Research Institute & Colleges, Dehra Dun
Central Food Technological Research Institute
(CSIR), Mysore
Warden & Co Pvt Ltd, Thane

INTERNATIOAL SYSTEM OF UNITS (SI UNITS)

Base Units

<i>Quantity</i>	<i>Unit</i>	<i>Symbol</i>
Length	metre	m
Mass	kilogram	kg
Time	second	s
Electric current	ampere	A
Thermodynamic temperature	kelvin	K
Luminous intensity	candela	cd
Amount of substance	mol	mole

Supplementary Units

<i>Quantity</i>	<i>Unit</i>	<i>Symbol</i>
Plane angle	radian	rad
Solid angle	steradian	sr

Derived Units

<i>Quantity</i>	<i>Unit</i>	<i>Symbol</i>	<i>Definition</i>
Force	newton	N	$1 \text{ N} = 1 \text{ kg.m/s}^2$
Energy	joule	J	$1 \text{ J} = 1 \text{ N.m}$
Power	watt	W	$1 \text{ W} = 1 \text{ J/s}$
Flux	weber	Wb	$1 \text{ Wb} = 1 \text{ V.s}$
Flux density	tesla	T	$1 \text{ T} = 1 \text{ Wb/m}^2$
Frequency	hertz	Hz	$1 \text{ Hz} = 1 \text{ c/s (s}^{-1}\text{)}$
Electric conductance	siemens	S	$1 \text{ S} = 1 \text{ A/V}$
Electromotive force	volt	V	$1 \text{ V} = 1 \text{ W/A}$
Pressure, stress	pascal	Pa	$1 \text{ Pa} = 1 \text{ N/m}^2$